

Remarks

Preliminary Matters

Claims 1, 3-7, and 12 have been cancelled. Claim 15 has been added. No additional fees are required. If determined otherwise, the Office is authorized to charge Deposit Account No. 07-1077 for the amount.

Support for the amendments to Claim 8 comes from Claim 1 and Claim 12.

Overall Response

Applicant cancels Claims 1 and 3-7 directed to the molded article to advance the application to allowance or appeal. Applicant concentrates the pending claims on a method of using the combination of the four nucleating agents to reduce cycle time of the thermoplastic elastomer when making a molded article.

§ 103 Rejection

All pending claims were rejected applying the combination of Asuka, Takahashi et al., and Utz et al. As explained by the Office, the nucleating agents of each of them can be combined into the combination of nucleating agents in Claim 8.

Because Claim 8 is directed to a method of use, the purpose of that combination of nucleating agents becomes patentably distinguishable over the combination of Asuka, Takahashi et al., and Utz et al.

Asuka at Paragraph [0009] of the machine translation identifies the solution to the problem to be achievement of many things, but none of them reduced cycle time.

Takahashi et al. at Paragraph [0006] of the machine translation identifies the problem to be dispersability of the nucleating agent in the polyolefin resin.

Utz et al. at Paragraph [0114] identifies the reason for the use of a nucleating agent is to improve stiffness and die-cuttability of the film.

None of the cited references teaches or suggests that one can reduce cycle time by the use of any nucleating agent, let alone the combination of four chemicals claimed in Claim 8.

Unexpected Results

Applicant responds to the criticisms by the Office of Tables 4 and 5 and Examples 10-11 and Comparative Examples C3-C5 with a point which the Office has not considered.

It is unexpected in itself that the Cycle Time proved to be the same for Comparative Examples C3 and C4 (Shore A hardnesses of 73 and 70, respectively) of two different commercially available and popular thermoplastic elastomers. Therefore, the comparison of Example 10 with Comparative Examples C3 and C4 for the same part of the same dimensions showed **the same 22% reduction in cycle time**.

In some respects, the comparison of Example 10 with Comparative Examples C3 and C4 makes for a more robust demonstration of unexpected results than a direct comparison of the same TPV with the same hardness, because *two different commercial grades of TPVs, of similar hardnesses to themselves and the improved TPV resulted in the same exact percentage of cycle time improvement*. In the polymer industry, it could be stated that Example 10 is a “drop-in replacement” for *either* of Santoprene™ 101-73 TPV *or* Forprene™ 6M0901 A70 TPV.

What these commercial TPVs share is a polyolefin continuous phase, within which the combination of four chemicals as nucleating agents perform their reduction in cycle time surprise.

The comparison of Example 11 to Comparative Example C5 adds to the robustness of the unexpected results, because the same combination of four nucleating agents achieve, *again*, a 22% reduction in cycle time when comparing a 87 Shore A hardness commercial TPV with a 85 Shore hardness commercial TPV which has a combination of nucleating agents.

It is unexpected, for the purpose of the invention to reduce cycle time that as little as 0.55 weight percent of nucleating capacity has the ability to reduce cycle time in commercially available TPVs by as much as 22%.

With a molder making Strain Relief parts at a rate of one per 31 seconds, or 116.12/hr, the molder can make 2787 parts/day.

Operating according to the method of Claim 8, as proven by Tables 4 and 5, that same mold using a very similar TPV with a very similar Shore A, *plus the combination of nucleating agents claimed*, can make the same Strain Relief parts at the rate of one per 24 seconds, or 150/hr. That permits the mold to make 3600 parts per day!

Asuka was trying to make transparent film.

Takahashi et al. as a secondary reference were making granules of nucleating agent in binder and metal soap for better dispersability of that masterbatch into polyolefin resin.

Utz et al. were making two-layer card stock with a printable top layer and a polymer bottom layer.

None of these references discloses or suggests a molded article, especially one which has a reduction in cycle time, even more especially a totally unexpected improvement in cycle time which can improve efficiency in a commercial molding operation, in a real-life situation, by as many as 813 per day, 5691 per week,

Conclusion

In any walk of life, whether molding plastic articles or examining patent applications, an abrupt 22% increase in efficiency is entirely unexpected. That is revolutionary, not evolutionary. It is entitled to a grant of patent rights for that method of use, employing a combination of four chemicals as nucleating agents. Applicant requests a Notice of Allowance for Claims 8, 10, 11, and 13-15.

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PolyOne Corporation
33587 Walker Road
Avon Lake, Ohio 44012

Respectfully submitted by:

John H. Hornickel
John H. Hornickel
Registration No. 29,393

Telephone: 440-930-3317
Fax: 440-930-3830
John.Hornickel@PolyOne.com